

On Celestial Day Observations. By Thomas Dick, Esq. LL.D.

“During the last nine or ten years more discoveries have been made in the heavens than at any previous period. More than thirty planetary bodies, in addition to those formerly known, have been descried by the unwearied observations of European astronomers. It has frequently occurred to me as not altogether improbable that some new planets might be discovered in the *day-time* in the region of the heavens which lies between the orbit of *Venus* and the sun.

“About the year 1813 I commenced a series of observations on the heavenly bodies in the daytime with a small equatoreal telescope, 20 inches focal length, furnished with powers of 15, 30, 45, and 100 times, with the view of determining the following particulars:—1. What stars and planets may be conveniently seen in the daytime, when the sun is above the horizon; 2. What degrees of magnifying power are requisite for distinguishing them; 3. How near their conjunction with the sun they may be seen; and, 4. Whether the diminution of the aperture of the object-glass of the telescope or the increase of magnifying power conduces most to render a star or a planet visible in daylight. Several hundreds of observations were made in reference to these particulars, and the results were published in vol. xxxvi. of Nicolson’s *Philosophical Journal*, for 1813.

“Now, it occurs to me that if a series of observations were made in the daytime on that region of the heavens which lies between the orbit of *Mercury* and the sun, it might be ascertained whether any planetary bodies exist within the orbit of that planet,—a space 37 millions of miles in extent between the orbit of *Mercury* and the central point of the solar system. But such a body could never be detected in the evening after sunset, as its greatest elongation from the sun could not be supposed to be more than 8 or 10 degrees, and consequently it would descend below the horizon in less than half-an-hour after sunset, and before twilight had disappeared. The only chance of detecting such a planet would be when it happened to transit the sun’s disk; but as this would only happen at distant intervals, and as it might make the transit in cloudy weather, or when the sun is absent from our hemisphere, there is little prospect of our discovering such a body in this way.

“I am of opinion that it is possible, and not at all improbable, that a planet within the orbit of *Mercury* (if such a body exist) might be detected in the daytime, were powerful telescopes applied to a space of the heavens about 12 or 14 degrees around the sun. Small stars have been seen even at noonday with powerful instruments, and consequently a planet even smaller than *Mercury* might be perceived in the daytime. On the 2d of October, 1843, about 2 o’clock, P.M., I perceived the planet *Venus*, about 2 hours before her superior conjunction with the sun, when only 58’ from the sun’s northern limb.

“In making such observations, it is requisite that a round opaque body be placed at a considerable distance from the observer, so as completely to intercept the body of the sun, and about $1\frac{1}{2}^{\circ}$ of the heavens all around him; and every portion of the surrounding space, extending to at least 12 or 14 degrees in every direction, should then be carefully and frequently examined by good telescopes. The opaque circular board, or other object, in order effectually to intercept the rays of the sun, should be placed at a considerable distance beyond the object-end of the telescope, and and if any contrivance could be made to make it move along with the sun so much the better, so as to prevent any of the solar rays from entering the tube of the telescope. It would likewise be expedient that the object-glass of the telescope should be somewhat contracted. Such observations, if persevered in, would undoubtedly afford a chance of detecting any revolving body that might exist within such a limit. It is not at all improbable that a planet exists within the range of 36 millions of miles from the sun; and from many observations I have made on *Venus* when very near the sun I am persuaded that a body, though only half the size of *Mercury*, could easily be distinguished in daylight with a good telescope.

“*Broughty Ferry, Dundee, May 31, 1855.*”

The King of Prussia has presented a Gold Medal to Lieut. Maury, U.S.N., on account of “the distinguished services which he has rendered to science and navigation by his labours in ascertaining the currents and depths of the ocean, and in determining the direction of the winds at different seasons and in different latitudes.” This mark of distinction was also accompanied with the presentation of one of the gold medals struck in honour of the publication of Baron Humboldt’s *Cosmos*.

The ephemeris of *Amphitrite* for 1855, published in the supplement to the *Nautical Almanac* for 1858, having been found to exhibit a large difference from observation, Mr. Hind has issued a printed circular containing a portion of M. Villarceau’s ephemeris of the planet (*Comptes Rendus*, tom. xl. No. 5), adapted to the meridian of Greenwich. This reprint contains the apparent places of the planet from July 1 to September 30 of the current year.

Remarks on the Construction of Telescopes with Simple Cylindrical Glasses. By M. Sturm.

(Communicated by Dr. Lee.)

“I take the liberty of calling attention to the application of cylindrical lenses to the construction of telescopes, which are,